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Terwel, J.

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## Curriculum differentiation: multiple perspectives and developments in education

J. TERWEL

This paper examines curriculum differentiation (i.e. streaming or ability-grouping). After placing curriculum differentiation in an international perspective, it outlines the main conclusions from empirical research on differentiation over several decades. Against this empirical background, it describes and considers the three specific orientations towards curriculum differentiation: a genetic perspective, a cultural perspective, and a sociological perspective. The insights from the various perspectives are integrated and expanded in a framework of curriculum theory, research, and practice.

Keywords: ability-grouping; curriculum differentiation; streaming.

Curriculum differentiation, i.e. streaming, tracking, ability-grouping, is one of the most persistent issues in curriculum theory and practice (see, e.g. Keitel 1987, Kliebard 1992, Oakes *et al.* 1992, Gravemeijer and Terwel 2000, Page 2000, Hattie 2002, Terwel and Walker 2004). Should societies offer a common curriculum to all students between the ages of 4–15, or should they offer different curricula to different categories of students (Walker 1990: 141)? The intensity and emotion of this debate can be partly explained by the political, cultural, educational, and moral implications of the various viewpoints. In this paper, the question will be described and analysed from multiple perspectives.

My starting point for the exploration of curriculum differentiation is Dewey's (1922: 141, 1933) plea for the development of 'a discriminating mind':

a 'disciplined intelligence': to cultivate a habit of suspended judgement, of scepticism; of desire for evidence, of appeal to observation rather than sentiment; discussion rather than bias; inquiry rather than conventional idealizations.

In my view, schools must emphasize the task of guiding students to learn to think for themselves, and create conditions for developing this 'disciplined intelligence' as a habit of mind. These aims should be pursued not by some but by *all* students.

Given such aims, I intend to examine critically the way schools structure and produce inequality through curriculum differentiation. A critical

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Jan Terwel is Professor of Education in the Faculty of Education and Psychology, Vrije University, Van der Boechorststraat 1, 1081 BT Amsterdam, The Netherlands; e-mail: j.terwel@psy.vu.nl. He currently chairs the Department of Education and is director of the research programme 'Strategic learning in the curriculum'. He co-edited (with Decker F. Walker) *Curriculum as a Shaping Force: Toward a Principled Approach in Curriculum Theory and Practice* (Hauppauge, NY: Nova Science, 2004).

review is a first and necessary step towards change. A second step centres on the basic educational principle that should guide educators in the design of curriculum and instruction. In all successful curriculum projects that I know, the challenge has always been to encourage the development of children by what Dewey (1902: 472) formulated so eloquently as 'continuous reconstruction, moving from the child's present experience out into that represented by the organized bodies of truth that we call studies'. Inspired by what we have called a 'principled approach' (Terwel and Walker 2004: 102), educators should consider those designs and practices in which this idea of 'continuous reconstruction' is a basic principle.

Curriculum differentiation should not primarily be evaluated by particular *a priori* moral assumptions but, instead, in terms of the 'causal mechanisms' which promote and maintain inequality in learning outcomes, attitudes, life-styles, and opportunities in the broader sense. However, in debates on curriculum differentiation values cannot be avoided.<sup>1</sup> Against this background, I will focus on the central question by asking whether curriculum differentiation encourages or hinders the development of 'a discriminating mind' in all students, and how this habit can be pursued by curriculum design and teaching practices.

### **Curriculum differentiation in international perspective**

Curriculum differentiation (offering different curricula to different categories of students) is common in all modern countries. Most European countries have traditionally differentiated school systems for 12–15-year-old students. In Germany, students from the age of 10 are selected into different school types or streams according to ability and career perspectives. In England and Wales, the successive prime ministers, John Major and Tony Blair, publicly lent their support to curriculum differentiation. The comprehensive movement in Europe from the 1960s and 1970s has lost its popularity. France and the Scandinavian countries still have a more comprehensive educational philosophy, but there, too, an ongoing debate is raging about the common curriculum and individual differences, while streaming and ability-grouping are common practices.

In the US, where the idea of 'comprehensive education' seems to have been widely accepted, the practice of curriculum differentiation is present at all levels, notwithstanding the overwhelming research message that tracking has hardly any overall effect on learning outcomes.<sup>2</sup> At the same time, tracking is a hot political issue because of its implications in relation to the *de facto* segregation of students into black and white schools. In the second half of the 20<sup>th</sup> century, presidents Kennedy, Johnson, Nixon, and Carter supported integration for students of different socio-cultural backgrounds. The Democratic President Clinton, in contrast to his Democratic predecessors, did not develop a programme for desegregation. Today segregation has reared its head again, not only between schools but especially by way of curriculum differentiation (i.e.

tracking) within schools. Students from African-American backgrounds and students of Latin-American origins are over-represented in low-achieving schools, and in lower and vocational tracks, a practice which might be labelled 'second-generation segregation' (Orfield and Yun 1999, Mickelson 2001).

### **Curriculum differentiation: empirical research on learning outcomes**

What is known from empirical research into curriculum differentiation and, more specifically, group composition? This research, which covers more than a century, may be summarized as follows.<sup>3</sup> In contrast to the views of many policy-makers, as well as administrators and practitioners, curriculum differentiation has no effects on overall (average) learning scores. Students in streamed or tracked schools do not outperform their counterparts in integrated (non-streamed) schools. However, some studies show differential effects for high- and low-achieving students. High-achieving students tend to have better results in a system with tracking, while low-achieving students perform better in heterogeneous classes. The benefits of tracking, if any, come to the gifted students. One of the causal mechanisms behind these research outcomes can be found in classroom interaction processes, to which I will return. In addition, there are indications that low-achieving students are more sensitive to the quality of their learning environment than are high-achieving students, probably because the latter can rely more on personal 'resources' such as prior knowledge, experience, cultural background, and 'habitus'. Dar and Resh (1986, 1994) indicate that curriculum differentiation turns out to be especially detrimental for low achievers because they appear to lose more than the high achievers win, when compared to a common curriculum for all. Although all students benefit from a high quality of the learning environment, there are indications of a need for a minimum attainment to profit from an enriched learning environment. To put it differently, there seems to be a limit to the 'performance interval around the mean' in which students can benefit from richer learning environments. Note that generalizations on this point cannot be made because the interval depends on the instructional models under consideration.

Finally, it should be mentioned that large-scale, quantitative studies have difficulties in capturing the processes underlying the learning outcomes of tracking. In small-scale qualitative studies these processes have been described for lower tracks in terms of less instructional time, lower cognitive level, slower pace, more interruptions by the teacher and peers, a less stimulating class climate, and a higher proportion off-task behaviour and consequently more time spent on discipline and class management. Thus, it is not only the teacher who steers the class, there is also a reciprocal effect from students to teachers. There are also indications for selection processes like 'bright flight' among students and 'quality flight' among teachers toward classes and schools with higher socio-economic status and overall achievement levels.

### **The genetic and bio-psychological perspectives**

Genetic and bio-psychological perspectives have played an important role in the research history of curriculum differentiation. In Germany, biologically-oriented anthropologists such as Hartnacke and Müller (Kuhlmann 1972) formulated the theoretical and ideological foundation for early selection and curriculum differentiation in the period between 1900–1960. During this period, many scientists worked within a ‘biologistic’ viewpoint. This point of view has been one of the main barriers to innovation in the traditional, elitist school systems in Europe, especially in Germany. How these ideas played a role in the discussion between the protagonists of the traditional Gymnasium (as part of the tripartite secondary school system in Germany) and the proponents of the comprehensive school has been described by Kuhlmann (1972).

In Britain and the US there was also a strong ‘biologistic’ movement during the 20<sup>th</sup> century. Heredity, intelligence, and education were the main topics in an ongoing discussion, which harked back to the theoretical legacy of Francis Galton in the 19<sup>th</sup> century. The important names in this debate include D. S. Jordan, C. B. Davenport, C. Burt, R. Lynn, H. J. Eysenck, and A. R. Jensen (Spitz 1986, Lowe 1997); these scientists assumed the existence of genetically-determined differences in IQ, and argued that students should be selected early for different streams or tracks, according to the outcomes of objective tests. The impact of this movement has been extremely important. ‘This is particularly true with respect to the defence of “tracking systems” by which children are directed through separate school routes towards differing career outcomes and contrasting adult life styles’ (Lowe 1997: 658).

More recently in the US, Herrnstein and Murray’s (1994) *The Bell Curve* is an example of the continuing strength of the genetic and bio-psychological perspective. The hierarchies in society and in the structure of a school system reflects the bell curve of IQ, which is, according to this view, regressible to genetic variation, not only from individual to individual but also from group to group. Programmes to improve opportunities for individuals or groups are doomed to fail. More specifically, ‘compensation programmes’ can only have short-term (Hawthorne) effects because the variance in intelligence is largely genetically-determined, and consequently, inequality is a human fate (Spitz 1986).

In the Netherlands, geneticists have expanded their domain of expertise by giving advice to policy-makers. Thus, some geneticists have recently advocated early selection of students into separate streams for different student categories (Galjaard 1994, 1996). Today the biological perspective is no longer merely philosophical or ideological in character. New developments in human genetics and new scanning techniques in brain research are offering insights that are being used to legitimize viewpoints and strategies relating to human development and education.

Developments in bio-psychology have also made their way into the discussion about education and curriculum differentiation. Research on twins offered new and convincing arguments on the degree, and the ways, in which behaviour is determined by genetic variation. One interesting and

relevant issue in relation to curriculum differentiation concerns the influence of the parental environment on the development of IQ in children. There are strong indications that parents play an important role in the development of IQ in young children. However, during development, as the child grows older, parental influence diminishes while the genetic make-up of the child him- or herself becomes more and more influential, contributing high percentages of explained variance in IQ scores (Boomsma 2001). Although these results from twin research have come under criticism from developmental psychologists (Collins *et al.* 2000: 221), they offer a challenge for proponents of the comprehensive ideal in education, and more specifically for the proponents of a common curriculum.

### **A cultural-narrative perspective**

Page and Valli (1990) and Page (2000) take a different position in the debate about curriculum differentiation. Their position is linked to a philosophical and methodological perspective in which curricula and schooling are conceived of as cultural and moral endeavours. In their interpretative studies, the specific context of the school plays an important role. Page has also examined curriculum differentiation in the wider context of the US, where the pendulum constantly swings between collectivism and individualism. In her view, the debate about curriculum differentiation has to be seen against this background of dualism.

The debate between the proponents and critics of curriculum differentiation is emotional and political and Page is searching for a way out of continuing impasse in this debate. 'Equality' is central to her approach. Thus, Page (2000: 119) has raised such critical questions as equality of what, and for whom? And who will be responsible? She asks whether definitions of equal opportunity are fair. Thus, in the meritocratic definition, equal opportunity has been described as assigning status according to inborn talents. From the egalitarian point of view, the criterion should be inborn humanness. However, according to Page, both positions minimize the extent to which learning is an individual liberty and responsibility. Instead of 'equal opportunity', Page (2000) proposes 'equality of esteem' as the central question, and puts aside the discussion about equal opportunity that has dominated discussion on curriculum differentiation for many decades. 'Equality of esteem may be the kind of equality that schools are best suited to promote' (p. 121).

Against this background, the discussion of curriculum differentiation assumes a new dimension. It is no longer an empirical question of differential effects for high- and low-achievers, or for students from different socio-economic backgrounds. Nor is the central issue 'equal opportunity', whether defined in meritocratic or egalitarian ways. In this cultural-narrative perspective, the question is about 'equality of respect' or 'human dignity'; and, at this point, a moral dimension enters the debate as the central question, creating a different perspective on curriculum differentiation. According to this view, a lower track in a system of curriculum differentiation is not necessarily good or bad, but has to be seen as a metaphor for, or



another version of, a higher track. The distinction between 'higher and lower' seems to be less important, as long as both strive towards 'equality of respect' as a moral obligation on schools and teachers.

Thus, in her analysis, Page tries to avoid, reconcile, or go beyond, the fundamental dilemmas posed by concepts like 'equality' and 'inequality of opportunity' by using seemingly more inclusive concepts such as 'equality of esteem'. In my view, this is a semantic, and somewhat confusing, attempt to look for a way out of what she sees as an impasse in the 'tracking wars'. It bypasses a rational, causal analysis of the problem and perceives it as part of a broader moral discourse about 'equality of respect'. To put it differently, Page's analysis is a form of re-labelling without offering a real solution to the problem. Although these kinds of analyses have to be mentioned because they raise the important moral issue of human dignity while stressing that learning is an individual liberty and responsibility, other forms of analysis are needed to gain deeper insight into not only learning as a social endeavour but also the mechanisms behind curriculum differentiation.

### **A sociological perspective**

Whereas the cultural-interpretative perspective takes its cue from values such as individual liberty, responsibility, ideas, personal choice, respect, esteem, and human dignity, a sociological approach to the phenomenon of curriculum differentiation is a search for the 'causal mechanisms' that drive the phenomenon. Instead of describing individual stories and case studies using narrative methods (e.g. Page and Valli 1990, Page 2000), a sociological approach goes a step further by looking for explanations in terms of the causal mechanisms that shape the behaviours, stories, values, and ideas of individuals and groups, whether or not the processes or the situations and factors involved are understood by the participants when they tell their individual stories.

A sociological perspective can be of help in analysing the phenomenon of curriculum differentiation. The work of Tilly (1998), in particular, seems promising in this respect. Tilly argues against individualism as an approach towards explaining 'persistent inequality'. His 'relational analysis' and 'categorization theory' clashes with the narrative mode in which people ordinarily think and speak about social processes (Tilly 1998: 21). Thus, people in Western countries often tell stories about how significant changes in their situation are produced by their own efforts. Narratives favour an individualistic analysis in which causal factors and social categories do not enter the picture. Such analyses often end in a discourse in which schools and teachers are praised or blamed for their intentions or actions according to moral criteria. Tilly's analysis offers a different view, although his work examines the world of labour and organizations in general. His theory centres on categories and boundaries between groups as well as on the causal mechanisms, chains, and links that cause 'persistent inequality'. There is a possible analogy here with the biological metaphors of 'niche' and 'niche-differentiation', which can be found, for example, in Goldschmidt (2000), and which I will return to in the discussion section of this paper.

In the analysis of curriculum differentiation I use one of Tilly's fundamental mechanisms, namely 'opportunity hoarding'. In contemporary society, opportunity hoarding often appears in the form of a 'niche' that has been found and claimed by a particular group, as when, for example, immigrants create and occupy a niche, or we see Italian terrazzo workers, Jewish diamond workers, Mexican cleaners, or Chinese in their restaurants. These processes are often facilitated both by the elite and non-elite as two sides of the same coin. Another, more regular, example can be found in the case of the emergence of groups of professionals in law, medicine, the trades, or in the world of entrepreneurs. All these examples have their roots in certain groups, cultures, countries, or families. 'Opportunity hoarding' is one of the basic process mechanisms that, according to Tilly (1998), fosters persistent inequality.

'Opportunity hoarding', as I define it in the context of curriculum differentiation, is the process by which people develop and reserve a certain education (curriculum, track, or stream) for a particular group of students. By introducing a new category into schooling, boundaries are erected between one category of students and another that are difficult to cross. Curriculum differentiation, in this perspective, is not so much an attempt to accommodate individual differences in capacities and interests as an organizational monopolization of educational resources by a category of people (elite or a non-elite). To put it differently, curriculum differentiation is an institutional mechanism that offers different opportunities to different categories of students by creating differences in content and methods and by selecting categories of students. Instead of simply stating that group differences in IQ can be mainly traced back to heredity, Tilly contends that group differences in IQ are caused by categorically-determined differences in experiences between groups of people. These differences in experiences are used, and then reinforced, in the processes of curriculum differentiation and selection.

Curriculum differentiation seen as a form of opportunity hoarding opens the way for its re-examination, and for recognizing that curriculum differentiation is just one aspect of a broader, more fundamental societal mechanism by which inequality emerges and is maintained. Two reinforcing mechanisms have to be mentioned here: 'emulation' and 'adaptation'.

Emulation is the choice and implementation of certain forms of curriculum differentiation from other countries, situations, or schools. More or less successful, already-existing models that have been used in some contexts are used in other contexts. In this way, emulation makes possible a rapid dissemination of certain variants of curriculum differentiation. Among these are sophisticated and differentiated forms of tracking, streaming, and setting, possibly in combination with home groups or mentor groups.

Adaptation refers to the procedures that encourage the day-to-day interaction within the curriculum and the school. It also implies the regulation of social relations between students and teachers in, and between, the various tracks. Another fundamental adaptation process centres on differences in the quality of interaction in higher and lower tracks (Oakes 1985, Oakes and Guiton 1995). In lower tracks, students are offered more opportunities to get involved in simple teacher-formulated question-and-answer activities, or



in exercises and drills. Students in higher tracks are stimulated to formulate their own questions and to reflect on different solutions.

Student composition, in terms of mean class-ability scores, is also an important causal factor in interactions. Students in classes with a higher ability tend to give each other higher-quality help and relevant feedback than their counterparts in the lower classrooms (Terwel *et al.* 2001). All these processes underscore, and expand, the existing differences between categories of students in the various curricular settings of the school.

In short, curriculum differentiation becomes the way by which schools structure categorical inequality and, in doing so, promote 'persistent inequality' between categories of students.<sup>4</sup> The various differentiations in the curriculum provide access to different resources in relation to knowledge, experiences, customs, and communities. Accessibility to these resources is restricted by boundaries that are often difficult to cross. However, it is important to recognize that this mechanism is embedded in the broader, fundamental mechanism of opportunity hoarding in the society as a whole, especially in the worlds of labour and industry.

Tilly's way of treating differences between people as categorically-determined differences in experiences between groups of people is inspiring but, in my opinion, too one-sided in that it overlooks important differences between students (Spitz 1986, Boomsma 2001).

### **A curricular perspective**

Theories of schooling and curriculum theories are always concerned with students, schools, and society. These are complex entities, and students' and teachers' experiences have to be placed in their socio-cultural and institutional context. It follows that the three perspectives I have outlined are necessary and must be addressed in any curriculum theory, and concomitant theories of curriculum differentiation.

I take it for granted that students are different as a consequence of complex interplays of their genetic make-ups and their categorically-determined experiences; and that schools try to accommodate these differences, while at the same time endeavouring to prepare students for society. All these perspectives can be seen as part of the collection of building-blocks for a curriculum theory. It is important to note that the fundamental mechanisms implied in the three perspectives are strongly inter-related and constitute dynamic forces in the development of a child. Never in the history of mankind has there been so much evidence for the complex interactions between nature and nurture, body and mind, individuals and groups.<sup>5</sup>

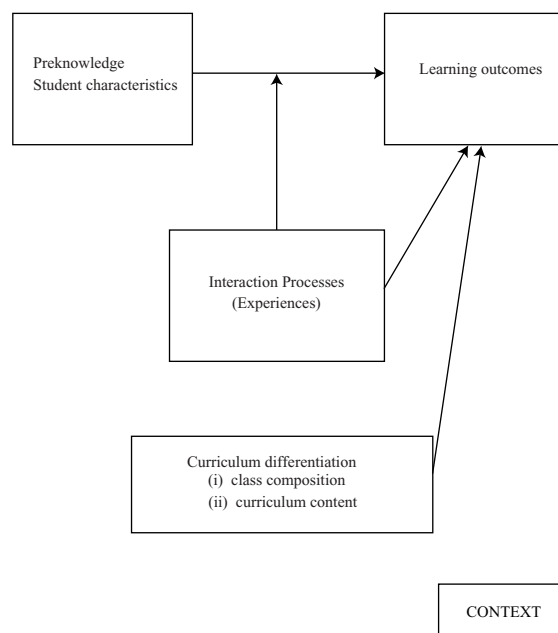
Given these basic assumptions, a curriculum theory should primarily be seen as a theory of educational planning, in which the development of the student is the main concern. It follows that the planning and implementation of *educational experiences* should be the central focus because these are the 'primary engines' of development and learning (Bronfenbrenner and Morris 1998). By experiences one could think of interactions between students, or between teachers and students, as being 'related to organized bodies of truth' (Dewey 1902) in the context of the school. In the (empirical) study of

these interaction processes the following questions seem to be crucial: How do learning processes develop from pre-knowledge toward learning outcomes? What are the causal mechanisms in the interaction processes? How are these related to learning outcomes? Given that planning is the central category in any curriculum (Wardekker 2004), one needs to know how interaction processes can be influenced in such a way that learning and development can take place; at which point the central issue of content and aims enters the discussion. In short, all questions are centred around the curriculum and its consequences, as well as how the various perspectives and factors (genetic, moral, social) affect the content and results of curriculum differentiation for the various student categories.

We have to recognize that there are antinomies involved here that cannot be solved in a logical manner. We should be looking for practical solutions within a specific educational context in dialogue with teachers. Curriculum theorists are certainly free to contribute to the empirical study of these issues and to reflections on their theoretical implications. What they *cannot* do is claim any special powers to deliver moral judgements by virtue of their professional expertise. It cannot be the exclusive right of the professional community to choose between various moral codes (Walker 1990: 140). Of course, curriculum theorists can clarify certain curricular choices of means and ends by referring to the expected outcomes on the basis of empirical findings. In addition, curriculum theorists may clarify the values and consequences of a curricular practice in the light of various moral or political standards. In particular, with regard to curriculum differentiation, questions about interaction processes, as well as questions about its effects on development and learning and/or its role in the legitimization of practices, lie at the heart of its rationale.

The integration of empirical findings and insights from *different* perspectives needs to be recognized in empirical curriculum studies and in the discussion of the wider philosophical implications of such studies. It is against this background that I have developed a theoretical model for curriculum studies (see figure 1). In this model, experiences evoked by interaction processes must to be seen as the 'primary engines' of learning and development. Interaction processes are affected by student characteristics, and the relationship between them is influenced by curriculum differentiation and its two main variables of class composition and curriculum. These processes and structures have to be placed in the context of the school as an institution that is embedded in the broader context of the society. Thus, curriculum differentiation can be seen, at least partly, as a specific case of opportunity hoarding, whether or not it is intended or understood as such by the participants when they speak in neutral terms about 'accommodating individual differences' and 'doing justice to differences in (inborn) talents between students'.

Various categories of determinants are incorporated into the model set out in figure 1. The genetic factor can be seen in the broader category individual student characteristics. Class composition and context represent the social factors at the class level. The educational dimension is expressed in the aims and the content of the curriculum, and also in the interaction (experiences) between students and teacher. In a curricular perspective, the outcomes of curriculum differentiation are not simply the sum of genetic and social factors. Both factors play an important role in contributing to the



**Figure 1. Longitudinal multi-level model.**

consequences of curriculum differentiation, but always in connection with the aims and content of the curriculum.

### **Expanding the empirical outcomes of curriculum differentiation**

Against this background, I present the findings from empirical research undertaken in a series of studies in the Netherlands and Australia (Brekelmans *et al.* 1997, Hoek *et al.* 2000, Terwel *et al.* 2001, Terwel 2004). These studies were, to a large extent, inspired by the work of Hans Freudenthal, the well-known Dutch mathematician. Freudenthal, in turn, was influenced by Dewey, Piaget, Vygotsky, and the European progressivists Ovide Decroly and Peter Petersen. As a well-known mathematician and director of an institute for curriculum research, development, and in-service training in mathematics education,<sup>6</sup> Freudenthal was able to go beyond his great sources of inspiration and make his philosophy immediately useful for curriculum thinking and classroom practice.

My first encounter with Freudenthal took place in the 1970s, when I attended a conference on comprehensive education in the Netherlands (Terwel 1990). In his lecture, Freudenthal criticized the German experiments with middle schools, where curriculum differentiation by means of tracking, streaming, and setting was daily practice. 'Our German colleagues', he said, 'differentiate students before they integrate them. This differentiation is merely an euphemism for separation' (Freudenthal 1973a: 91). Freudenthal was strongly opposed to early selection and separation of

students in different curricular programmes, and proposed a new integrated, common curriculum for all students in the first stage of secondary education.

Freudenthal's (1973a: 118) educational credo was that 'mathematics should be learned as a human activity' and that this could be realized by 'guided reinvention'. He strongly advocated 'mathematics for all', and condemned all forms of streaming and setting by referring to the inevitable Matthew effects. He was convinced that students from different ability levels should not only be in the same classrooms in the first years of secondary education, but should also follow a common curriculum which should accommodate differences between students by allowing 'levels in the learning process' (Freudenthal 1973a, b, 1978, Terwel *et al.* 1994, Gravemeijer and Terwel 2000).

In an extensive curriculum experiment on the part of the Dutch National Institute for Curriculum Development, Freudenthal's ideas were put to the test with the development, implementation, and evaluation of a mathematics curriculum for Dutch secondary schools (Terwel *et al.* 1988). In this project one of the major dilemmas of curriculum differentiation emerged. Although the overall effects of the Freudenthal curriculum were significant and practically-relevant when compared to a control group with a more traditional curriculum, the conditions under which the experimental curriculum was implemented also made a difference. The outcomes in two of the participating schools were particularly instructive. These high-quality schools were comparable in terms of student population, teachers, initial mathematics scores, resources, and so on. The conditions under which the experimental curriculum was implemented differed on one salient point: while one school, 'The Yssel', implemented the 'Freudenthal curriculum' in full as a common curriculum for all in heterogeneous classrooms, the other school, 'The Linge', implemented the same curriculum but in a existing system of separate streams for high-, medium- and low-achieving students. This offered a unique opportunity to test the effects of curriculum differentiation (streaming) in a real school setting. The results were consistent with many other international studies: both schools were comparable in mean results. Thus, there was a zero effect of curriculum differentiation. However, the two schools showed a tendency to produce different effects for high- and low-achieving students. Low-achieving students seemingly did a better job at 'The Yssel', while high-achieving students appeared to be better off at 'The Linge'. A secondary, more sophisticated, multi-level analysis clearly showed significant effects of class composition (Van den Eeden and Terwel 1994).

This experiment was the forerunner of a series of studies (Terwel 2003) looking for the effects of curriculum differentiation, i.e. of curricular content and class composition on learning processes and learning outcomes. In several studies class composition as measured, for example, by mean class ability in mathematics, was found to have an effect on the development (transformation) of a student's initial knowledge toward his or her learning outcomes (so-called 'peer effects'). Thus, there were once again firm indications that the intellectual resources in a class can encourage or hinder the learning processes and outcomes of students over and above the effects already explained by initial differences, curricular content, and method of instruction (Terwel *et al.* 1994, 2001, Brekelmans *et al.* 1997, Terwel 2003).

These outcomes are in line with the work of Dar and Resh (1986, 1994), but also with other studies in the Netherlands in which socio-cultural differences in classroom composition were also taken into consideration. These effects can to a large extent also be explained by differences not so much in the 'colour' of a classroom (black or white) but in its cognitive resources, which can in turn be traced back to the categorically-differentiated experiences of the students in their contexts at home and in the local community (Tilly 1998, Westerbeek 1999). The findings revealed what many parents know: the student composition in a school or class counts. Fellow students can really make a difference! Such findings are a challenge to those involved in discussions of curriculum differentiation.

## Discussion

The main question in this paper is the following. Should we provide all 4-15-year-olds with a common curriculum, or should we present different curricula to different categories of students? There are clear indications that curriculum differentiation (streaming or tracking) produces differential effects for high- and low-achieving students. High-achieving students benefit from being in a high track, while low-achieving students suffer from being in the lower track as compared to experiencing a common curriculum for all. In other words, curriculum differentiation is a zero-sum game. The quality of the interaction processes in the higher and lower tracks appear to be pivotal in explaining these effects. All students, but low-achieving students in particular, appear to be sensitive to the quality of their learning environment. They suffer most in an impoverished learning environment in which the quality of their interactions and experiences is inferior.

This outcome raises important questions concerning 'equality of opportunity' for students in public elementary and secondary schools. 'Equality of opportunity' is a complex concept that can be conceived of in diametrically opposed ways, i.e. as meritocratic or egalitarian. Could we, in the light of the empirical findings I have outlined, and against the background of Article 27 of the Universal Declaration of Human Rights, scrap the imperative of 'equality of opportunity' altogether in favour of 'equality of esteem' as an ideological driving force? Equality of esteem, as Page (2000) has stated, is an important value to be pursued in all educational situations.

However, equality of esteem cannot be a substitute for equality of opportunity. There is no contradiction in education between respect and esteem on the one hand and equal opportunity and justice on the other. Equality of esteem primarily has its fulfilment in the realization of equality of opportunity, whether this is conceived of in a meritocratic or in an egalitarian sense. Both equality of opportunity and equality of esteem are best served in situations in which students from different backgrounds and different ability levels work together in heterogeneous classrooms. The two versions of equal opportunity can be applied to different stages of the common curriculum. In the first stages, the egalitarian concept would seem most appropriate in the

first of these stages, while the meritocratic vision gradually takes over later. In curricular terms, the 'common core' shrinks, while the differentiated part of the curriculum grows.

Especially in the first stages of secondary education, it is their fellow-students that are the most important and relevant features of the school. Status assignment is a powerful mechanism, in the school, in the classroom, and in particular in the peer group. Assigning students to different tracks reinforces processes of categorization and self-categorization, which produce 'group contrast effects'. These processes drive a wedge, both socially and intellectually, between categories of students. 'Now you can see why ability grouping (or "tracking") has the effects it does' (Harris 1998: 242).

One way to tackle this problem would be to open choice-processes for students and parents, while keeping a system of curriculum differentiation intact. Thus, choice could soften the sharp edges of curriculum differentiation. However, we know that choices as 'detracking tools' rarely have the intended effects: institutional barriers, feelings of inadequacy, and the wish not to leave the 'safe places' in the lower streams or tracks are among the most frequently heard arguments (Yonezawa *et al.* 2002). In other words, concepts of esteem and self-respect enter the scene. It is these ideals that are often jeopardized when students move from a lower to a higher track, especially when they feel that their culture, knowledge, and experience are not valued in the new situation.

In light of the theories of Tilly (1998) and Harris (1998), we can see how boundaries between categories of students emerge, how they persist, and how the processes involved work. Curriculum differentiation as a specific case of 'opportunity hoarding' produces persistent social, attitudinal, and cognitive inequalities. Self-categorization ends up as self-tracking. Many students have to face points of no return as a consequence of early curriculum differentiation.

A conspiracy theory is not needed to explain these processes. Nor should curriculum differentiation be conceived as mechanistically determined by the marketplace. Curriculum differentiation is a result of ideologies and forces from different directions, that is access for all to secondary education and the selection of an elite. Inclusion and exclusion are fundamental in all human endeavours, and not only there: we know that these processes are more or less universal in all species; the formation of 'niches' with the related competition for resources is one of the dominant mechanisms by which communities are structured. Curriculum differentiation is mostly conceived of as an educational answer to individual differences. However, characteristics and habits cannot be isolated from the categorically-determined experiences of students in their community.

The metaphor of 'niche' become more apt when we see in the further sense of 'niche differentiation', a socio-biological process that is intensified, for example, in times of droughts and lack of resources. Different kinds of fish are able to co-exist perfectly happily in certain sectors of the African Lake Victoria. However, as soon as resources become scarce, small differences between species create competition—and the break-up of piscine groups into different 'niches' of the lake (Goldschmidt 2000).



An analogy with curriculum thinking and practice would not seem to be out of place here. In times of prosperity there is less need for competition, and ideas about a common curriculum and comprehensive education are in vogue. In times of decline, especially under free market conditions, differences between students are emphasized, and early selection and tracking are called for. Categorization theory offers convincing arguments to show that there are causal mechanisms at work in this shift of emphasis, not only in the society as a whole but also in the school as an institution. The marketplace accelerates these processes. Parents and students are subjected to processes of categorization and self-categorization, which reinforce the structures that produce the inequality in the first place.

Thus, if it is agreed that one of the most fundamental tasks of the school is to guide *all* students in developing 'discriminating minds', and that we know how curriculum differentiation works for different categories of students, it becomes clear that more is needed than de-tracking schools by promoting choice. This frequently used but unsuccessful strategy is only a small first step in a process that should end in the dismantling of track-structures in the first stages of secondary education (Yonezawa *et al.* 2002).

However, without an adequate curricular vision this important step, too, is doomed to fail. New forms of curricula and new teaching strategies are needed. Fortunately, we have fundamental ideas and curriculum examples available, which are not only promising but also have been tested in real school situations (Freudenthal 1973a, b, 1978, Terwel 1990, 2003, Lee 2001).

However, we must also recognize that there are individual differences between students. And these differences are not solely 'socially-determined'. Curriculum differentiation is more than a consequence of a desire for categorizing, or as the result of conflicting powers and interests. The instinct for categorization, and much of what is seen in schools originates from a desire to make distinctions, creates in-groups and out-groups, and the borders between them.<sup>7</sup> Such categories are not entirely voluntary or arbitrary; there are also restrictions enforced by the world out there that cannot be ignored. Re-labelling low-achieving and high-achieving students as 'pink panthers' and 'white elephants' does not alter the fact that large differences exist.

It would, therefore, seem to be inadequate to explain curriculum differentiation solely on the basis of categorically-determined experiences, and to conceive of categorical distinctions as totally arbitrary. 'Real' (as opposed to socially-constructed) differences between students do exist: in IQ, in the multiple intelligences of Howard Gardner, etc. Curriculum theory cannot avoid such differences as the sources of possible arguments for curriculum differentiation. However, each time such a case is made, we should be very cautious—and suspicious—especially when it comes to rigid, static, and permanent distinctions between individuals and groups. We must ask what constitutes a real and relevant category and what does not. Who will benefit from the categorization and who will suffer? The history of humankind shows many artificial, arbitrary, and harmful distinctions, leading to segregation and durable inequalities. From a socio-cultural and developmental perspective, we should see students as

participants in a dynamic culture rather than as individuals to be fitted into static, pre-determined categories. Students' identities and lifestyles are continuously recreated. We should not regard students', e.g. ethnicities, as static categories, but as the locus of fluid processes of identity-formation and life-style development.

If schools had as their first priorities the tasks of guiding *all* students to learn to think for themselves and creating conditions that would enable every student to gain access to the fruits of scientific development, we would see the ways schools structure and produce inequality in a new way. Such a critical look would be a first and necessary step towards change. In all successful curriculum projects that I know of the great challenge has always been to facilitate the development of children by what Dewey (1902: 472) formulated so eloquently as 'continuous reconstruction, moving from the child's present experience out into that represented by the organized bodies of truth that we call studies'.

As scholars in the curriculum field, we should look for new designs and good practices in which this idea of 'continuous reconstruction' is a basic principle. This didactical principle should be accompanied by an 'institutional reconstruction' aimed at replacing the track-structure by heterogeneous grouping practices in which all children participate, e.g. in collaborative and adaptive arrangements, in which the computer and the digital camera are important tools.

### Notes

1. As far as my own position is concerned, I will try to anchor my point of view in relation to Article 27 of the Universal Declaration of Human Rights, which says 'All persons have the right to participate in freedom in the cultural life of the community, to enjoy art and to get access to the fruits of scientific developments'.
2. In addition, in some studies indications are found for differential effects (Hattie 2002, Thrupp *et al.* 2002) to which I return in the next section.
3. See, e.g. Yates (1966), Webb (1982), Willms (1985, 1986), Hallinan (1987), Oakes *et al.* (1992), Van den Eeden and Terwel (1994), Reay (1998), Hallinan and Kubitschek (1999), Pallas (1999), Kerckhof and Glennie (1999), Westerbeek (1999), Resh (1999), Terwel *et al.* (2001), Hattie (2002), Thrupp *et al.* (2002), and Terwel and Walker (2004).
4. Even in elementary schools principals intentionally manipulate class membership for the added composition effects (Burns and Mason 2002).
5. The great dualistic traditions in philosophy such as empiricism and rationalism are moving toward a more unified concept of human nature. This new concept is emerging under the influence of new insights into human development from biology, medicine, chemistry, socio-biology, and psychology as a result of research into the human genome, behaviour genetics, neural networks, and twin research (Collins *et al.* 2000).
6. Currently named the 'Freudenthal Institute'.
7. Harris (1998) believes that the evolution of human brains has been such that people are able to make fine distinctions and have a strong tendency to classify. This capacity apparently has survival value, which is the reason why it developed as it did. A category can be assigned to almost any content (signifiant/signifié). In developing and using categories, it is possible to apply almost any standard researchers prefer. That is why so many categorizations are used to please and to serve certain groups of people and to deny basic rights to others. Concepts, as opposed to words, are often involved in categorization. Even babies and pigeons are able to categorize, not in terms of words, but in terms of concepts (Harris 1998).

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